

JUL 22 2008

Response to Final Office Action
dated May 23, 2008

U.S. Application No. 10/662,407
Attorney Docket No.: 4208-4114US1

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Previously Presented) An apparatus, comprising:

a memory device; and
a processor disposed in communication with the memory device, the processor configured to:
conduct an inquiry to discover at least one nearby device;
when an inquiry result includes an indication that at least one nearby device may include a middleware layer, the middleware layer comprising a middleware software for providing application and service discovery;
create a wireless short-range connection to said at least one nearby device;
confirm whether said at least one nearby device includes the middleware layer by requesting corresponding information from said at least one nearby device via the wireless short-range connection; and
when said at least one nearby device includes the middleware layer:
execute the middleware layer to perform application and service discovery.

2. (Previously Presented) The Apparatus of claim 1, wherein the middleware layer includes a service discovery protocol and at least one computer program, each computer program comprising at least one sequence of operational instructions.

3. (Previously Presented) The Apparatus of claim 1, wherein when said at least one nearby device includes the middleware layer, the processor is further configured to:
execute the middleware layer to launch applications and services.

Response to Final Office Action
dated May 23, 2008

U.S. Application No. 10/662,407
Attorney Docket No.: 4208-4114US1

4. (Previously Presented) The Apparatus of claim 1, wherein to conduct the inquiry, the processor is further configured to:
send an inquiry request message;
receive an inquiry response message from said at least one nearby device, the inquiry response message including the indication.
5. (Previously Presented) The Apparatus of claim 4, wherein the inquiry request message is a Bluetooth inquiry command, and the inquiry response message is a Bluetooth inquiry result command.
6. (Previously Presented) The Apparatus of claim 5, wherein setting at least one bit in the Bluetooth inquiry result command to at least one predetermined value is the indication.
7. (Previously Presented) The Apparatus of claim 6, wherein said at least one bit includes at least one of the ad hoc networking aware bit, the location information bit, or the telephony capable bit.
8. (Previously Presented) The Apparatus of claim 5, wherein setting at least two bits in the Bluetooth inquiry result command to at least one predetermined value is the indication.
9. (Previously Presented) The Apparatus of claim 8, wherein said at least two bits includes at least two of the ad hoc networking aware bit, the location information bit, or the telephony capable bit.
10. (Previously Presented) The Apparatus of claim 8, wherein said at least two bits includes the ad hoc networking aware bit, and at least one of the location information bit, or the telephony capable bit.

Response to Final Office Action
dated May 23, 2008

U.S. Application No. 10/662,407
Attorney Docket No.: 4208-4114US1

11. (Previously Presented) The Apparatus of claim 1, wherein to create the connection, the processor is further configured to:
- send a paging request message directed to said at least one nearby device; and
 - receive a paging accept message from said at least one nearby device.
12. (Previously Presented) The Apparatus of claim 1, wherein to confirm that said at least one nearby device includes the middleware layer, the processor is further configured to:
- send a recognition request message to said at least one nearby device; and
 - receive a recognition response message from said at least one nearby device.
13. (Previously Presented) The Apparatus of claim 12, wherein receipt of the recognition response message confirms that said at least one nearby device includes the middleware layer.
14. (Previously Presented) The Apparatus of claim 12, wherein the recognition response message includes a confirmation that said at least one nearby device includes the middleware layer.
15. (Previously Presented) The Apparatus of claim 14, wherein setting at least one bit in the recognition response message to at least one predetermined value is the confirmation.
16. (Previously Presented) The Apparatus of claim 12, wherein the recognition request message is a Bluetooth Service Discovery Protocol request and the recognition response message is a Bluetooth Service Discovery Protocol response.
17. (Previously Presented) The Apparatus of claim 1, wherein to execute the middleware layer to perform application and service discovery, the processor is further configured to:
- receive a notification message from said at least one nearby device, the notification message including a local application directory stored in said at least one nearby device;
 - store an update to a combined application directory, the update based on a comparison of the local application directory and the combined application directory; and

Response to Final Office Action
dated May 23, 2008

U.S. Application No. 10/662,407
Attorney Docket No.: 4208-4114US1

send an update message to said at least one nearby device, the update message including an update portion of the combined application directory for updating the local application directory stored in said at least one nearby device.

18. (Previously Presented) The Apparatus of claim 17, wherein the processor is further configured to:

launch a local application based on a reference in the combined application directory; and
connect the local application to a counterpart application executing on said at least one nearby device.

19. (Previously Presented) A method for performing device detection and service discovery in a mobile ad hoc communications network, comprising:

conducting an inquiry to discover at least one nearby device,
when an inquiry request result includes an indication that at least one nearby device may include a middleware layer, the middleware layer comprising a middleware software for providing application and service discovery:

creating a wireless short-range connection to said at least one nearby device;
confirming whether said at least one nearby device includes the middleware layer by requesting corresponding information from said at least one nearby device via the wireless short-range connection;

and

when said at least one nearby device includes the middleware layer:

executing the middleware layer to perform application and service discovery.

20. (Original) The method of claim 19, wherein the middleware layer includes a service discovery protocol and at least one computer program, each computer program comprising at least one sequence of operational instructions.

Response to Final Office Action
dated May 23, 2008

U.S. Application No. 10/662,407
Attorney Docket No.: 4208-4114US1

21. (Original) The method of claim 19, wherein when said at least one nearby device includes the middleware layer, the method further comprises:
executing the middleware layer to launch applications and services.
22. (Previously Presented) The method of claim 19, wherein the conducting of the inquiry further comprises:
sending an inquiry request message; and
receiving an inquiry response message from said at least one nearby device, the inquiry response message including the indication.
23. (Original) The method of claim 22, wherein the inquiry request message is a Bluetooth inquiry command, and the inquiry response message is a Bluetooth inquiry result command.
24. (Original) The method of claim 23, wherein setting at least one bit in the Bluetooth inquiry result command to at least one predetermined value is the indication.
25. (Original) The method of claim 24, wherein said at least one bit includes at least one of the ad hoc networking aware bit, the location information bit, or the telephony capable bit.
26. (Original) The method of claim 23, wherein setting at least two bits in the Bluetooth inquiry result command to at least one predetermined value is the indication.
27. (Original) The method of claim 26, wherein said at least two bits includes at least two of the ad hoc networking aware bit, the location information bit, or the telephony capable bit.
28. (Original) The method of claim 26, wherein said at least two bits includes the ad hoc networking aware bit, and at least one of the location information bit, or the telephony capable bit.
29. (Previously Presented) The method of claim 19, wherein the creating of the wireless short-range connection further comprises:

Response to Final Office Action
dated May 23, 2008

U.S. Application No. 10/662,407
Attorney Docket No.: 4208-4114US1

sending a paging request message to said at least one nearby device; and
receiving a paging accept message from said at least one nearby device.

30. (Original) The method of claim 19, wherein the confirming further comprises:
sending a recognition request message to said at least one nearby device; and
receiving a recognition response message from said at least one nearby device,
31. (Original) The method of claim 30, wherein the receiving of the recognition response
message confirms that said at least one nearby device includes the middleware layer.
32. (Original) The method of claim 30, wherein the recognition response message includes
a confirmation that said at least one nearby device includes the middleware layer.
33. (Original) The method of claim 32, wherein setting at least one bit in the recognition
response message to at least one predetermined value is the confirmation.
34. (Original) The method of claim 30, wherein the recognition request message is a
Bluetooth Service Discovery Protocol request and the recognition response message is a Bluetooth
Service Discovery Protocol response.
35. (Original) The method of claim 19, wherein the executing of the middleware layer to
perform application and service discovery further comprises:
receiving a notification message from said at least one nearby device, the notification
message including a local application directory stored in said at least one nearby
device;
storing an update to a combined application directory, the update based on a comparison of
the local application directory and the combined application directory; and
sending an update message to said at least one nearby device, the update message including
an update portion of the combined application directory for updating the local
application directory stored in said at least one nearby device.

Response to Final Office Action
dated May 23, 2008

U.S. Application No. 10/662,407
Attorney Docket No.: 4208-4114US1

36. (Original) The method of claim 35, further comprising:
launching a local application based on a reference in the combined application directory;
and
connecting the local application to a counterpart application executing on said at least one
nearby device.
37. (Currently Amended) A computer program product, executable in a computer system,
comprising:
a computer recordable and readable medium storing:
program code for conducting an inquiry to discover at least one nearby device;
program code for creating a wireless short-range connection to said at least one nearby
device when an inquiry result includes an indication that at least one nearby device may
include a middleware layer, the middleware layer comprising a middleware software for
providing application and service discovery:
program code for confirming whether said at least one nearby device includes the
middleware layer by requesting corresponding information from said at least one nearby
device via the wireless short-range connection when the inquiry includes the indication
that said at least one nearby device may include the middleware layer; and
program code for executing the middleware layer to perform application and service
discovery when said at least one nearby device includes the middleware layer.
38. (Original) The computer program product of claim 37, wherein the middleware layer
includes a service discovery protocol and at least one computer program, each computer program
comprising at least one sequence of operational instructions.
39. (Original) The computer program product of claim 37, the computer recordable and
readable medium further storing:
program code for executing the middleware layer to launch applications and services when
said at least one nearby device includes the middleware layer.

Response to Final Office Action
dated May 23, 2008

U.S. Application No. 10/662,407
Attorney Docket No.: 4208-4114US1

40. (Previously Presented) The computer program product of claim 37, wherein the program code for conducting the inquiry further comprises:
program code for sending an inquiry request message; and
program code for receiving an inquiry response message from said at least one nearby device, the inquiry response message including the indication.
41. (Previously Presented) The computer program product of claim 37, wherein the program code for creating the wireless short-range connection further comprises:
program code for sending a paging request message directed to said at least one nearby device; and
program code for receiving a paging accept message from said at least one nearby device.
42. (Original) The computer program product of claim 37, wherein the program code for confirming that said at least one nearby device includes the middleware layer further comprises:
program code for sending a recognition request message to said at least one nearby device;
and
program code for receiving a recognition response message from said at least one nearby device,
43. (Original) The computer program product of claim 37, wherein the program code for executing the middleware layer to perform application and service discovery further comprises:
program code for receiving a notification message from said at least one nearby device, the notification message including a local application directory stored in said at least one nearby device;
program code for storing an update to a combined application directory, the update based on a comparison of the local application directory and the combined application directory; and

Response to Final Office Action
dated May 23, 2008

U.S. Application No. 10/662,407
Attorney Docket No.: 4208-4114US1

program code for sending an update message to said at least one nearby device, the update message including an update portion of the combined application directory for updating the local application directory stored in said at least one nearby device.

44. (Original) The computer program product of claim 43, wherein the program code for executing the middleware layer to perform application and service discovery further comprises:
program code for launching a local application based on a reference in the combined application directory; and
program code for connecting the local application to a counterpart application executing on said at least one nearby device.

45. (Previously Presented) Apparatus, comprising:
means for conducting an inquiry to discover at least one nearby device,
means for creating a wireless short-range connection to said at least one nearby device when an inquiry result includes an indication that at least one nearby device may include a middleware layer, the middleware layer comprising a middleware software for providing application and service discovery;
means for confirming that said at least one nearby device includes the middleware layer by requesting corresponding information from said at least one nearby device via the wireless short-range connection when the inquiry includes the indication that said at least one nearby device may include the middleware layer; and
means for executing the middleware layer to perform application and service discovery when said at least one nearby device includes the middleware layer.

46. (Previously Presented) The Apparatus of claim 45, wherein the middleware layer includes a service discovery protocol and at least one computer program, each computer program comprising at least one sequence of operational instructions.

Response to Final Office Action
dated May 23, 2008

U.S. Application No. 10/662,407
Attorney Docket No.: 4208-4114US1

47. (Previously Presented) The Apparatus of claim 45, further comprising:
means for executing the middleware layer to launch applications and services when said at
least one nearby device includes the middleware layer.
48. (Previously Presented) The Apparatus of claim 45, wherein the means for
conducting the inquiry further comprises:
means for sending an inquiry request message; and
means for receiving an inquiry response message from said at least one nearby device, the
inquiry response message including the indication.
49. (Previously Presented) The Apparatus of claim 45, wherein the means for creating
the wireless short-range connection further comprises:
means for sending a paging request message directed to said at least one nearby device; and
means for receiving a paging accept message from said at least one nearby device.
50. (Previously Presented) The Apparatus of claim 45, wherein the means for
confirming that said at least one nearby device includes the middleware layer further comprises:
means for sending a recognition request message to said at least one nearby device; and
means for receiving a recognition response message from said at least one nearby device,
51. (Previously Presented) The Apparatus of claim 45, wherein the means for executing
the middleware layer to perform application and service discovery further comprises:
means for receiving a notification message from said at least one nearby device, the
notification message including a local application directory stored in said at least one
nearby device;
means for storing an update to a combined application directory, the update based on a
comparison of the local application directory and the combined application
directory; and

Response to Final Office Action
dated May 23, 2008

U.S. Application No. 10/662,407
Attorney Docket No.: 4208-4114US1

means for sending an update message to said at least one nearby device, the update message including an update portion of the combined application directory for updating the local application directory stored in said at least one nearby device.

52. (Previously Presented) The Apparatus of claim 51, wherein the means for executing the middleware layer to perform application and service discovery further comprises:

means for launching a local application based on a reference in the combined application directory; and

means for connecting the local application to a counterpart application executing on said at least one nearby device.

53. (Previously Presented) A wireless device, comprising:

a wireless short range transceiver;

a memory device; and

a processor disposed in communication with the memory device, the processor configured to:

receive with the transceiver an inquiry request message,

transmit with the transceiver an inquiry response message including an indication that

device includes a middleware layer, said middleware layer comprising a middleware software for providing application and service discovery;

create with the transceiver a wireless short-range connection to said at least one nearby device in response to receiving a paging request message from said at least one nearby device;

confirm whether said at least one nearby device includes the middleware layer by requesting corresponding information from said at least one nearby device via the wireless short-range connection; and

when said at least one nearby device includes the middleware layer:

execute the middleware layer to perform application and service discovery.